See 20-34A

Federal Aviation Agency

ADVISORY CIRCULAR

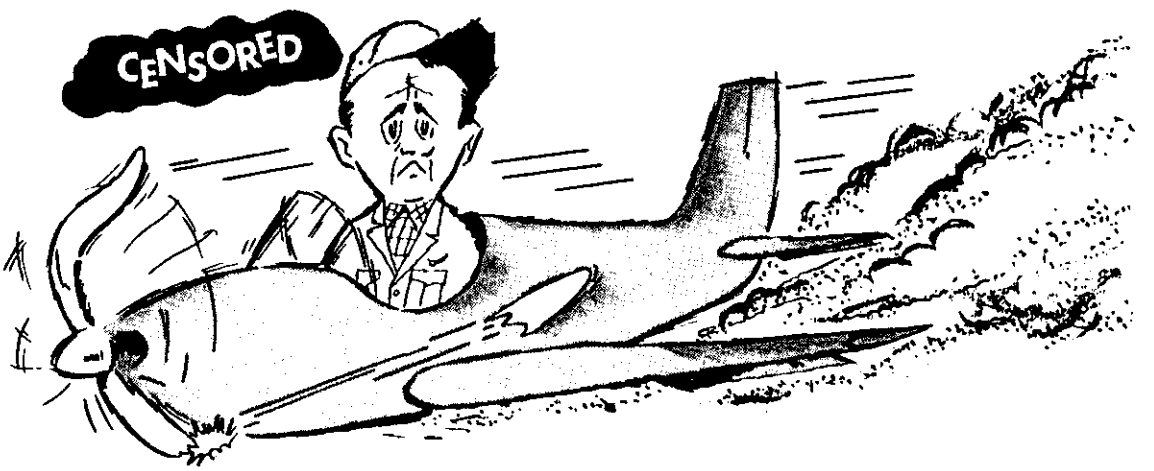
AC NO: AC 20-34
AIRCRAFT
EFFECTIVE: 3/8/65

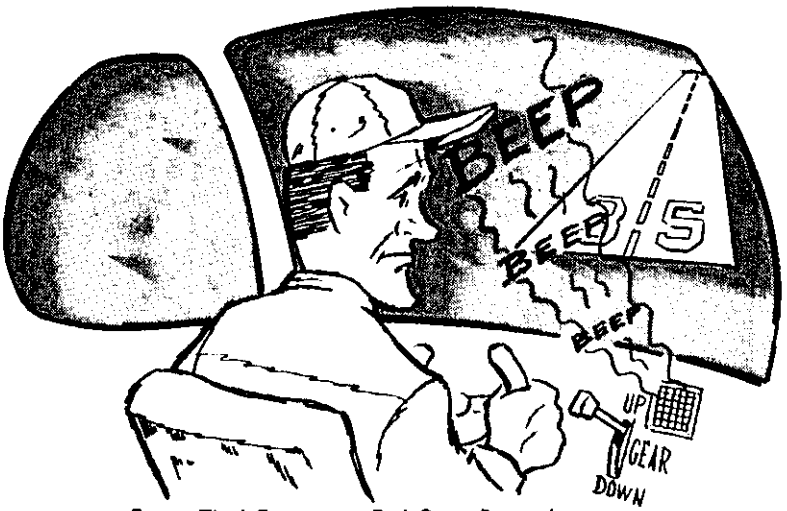
SUBJECT: PREVENTION OF RETRACTABLE LANDING GEAR FAILURES

1. PURPOSE. This advisory circular provides information and suggested procedures to minimize landing accidents involving aircraft having retractable landing gear.

2. CANCELLATION. Flight Standards Service Release No. 465, Prevention of Retractable Landing Gear Failures - General Aviation Aircraft, is canceled.

3. GENERAL. Over 500 accidents or nearly 10 percent of the total accidents reported last year involve gear-up landings or collapse of the landing gear. These accidents are either caused by a human factor or they are mechanically induced. Human errors may never be eliminated, but they can be minimized. The performance of frequent and exacting maintenance by qualified personnel, in conjunction with deliberate, careful, and continued use of the checklist by pilots, should materially reduce the number of accidents involving retractable landing gear.





Erase That Frown - Put Gear Down !

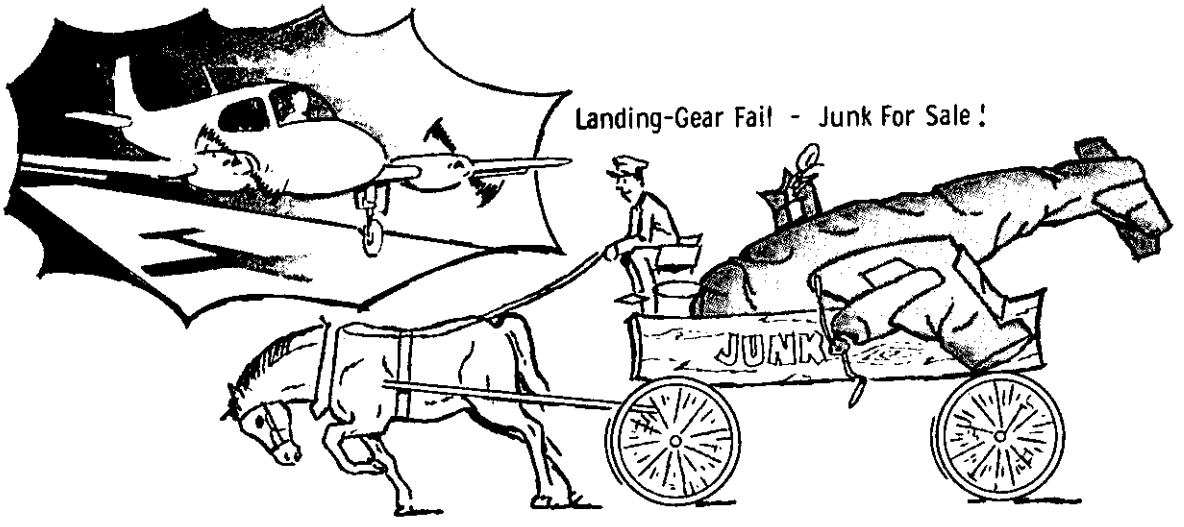
4. PREVENTION OF GEAR-UP OR COLLAPSED GEAR LANDINGS. We recommend the following tried and proven landing procedures to deter inadvertent wheels up or inadvertent gear retraction during touchdown and rollout:

   a. On the downwind leg, make it a habit to COMPLETE the recommended checklist for your aircraft. This accomplishes two purposes. It insures that action has been taken to lower the gear, and it increases your awareness so you can recheck the gear-down indicators prior to landing.

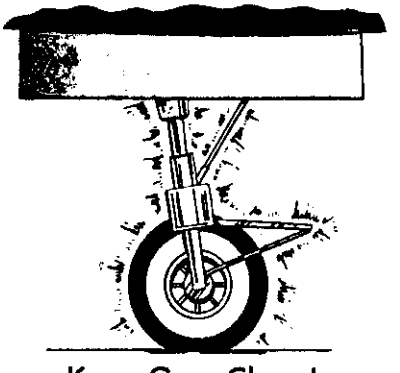
   b. Complete the landing roll and turn off the runway before operating any levers or switches, unless good operating practices call for them. This will accomplish the following: Your landing gear strut safety switches will be actuated, deactivating the landing gear retracting system. After rollout, you will be more composed and better able to identify the proper switches and/or levers.

   Remember, the foregoing applies to YOU! You as a pilot are responsible for the safe operation of your aircraft.

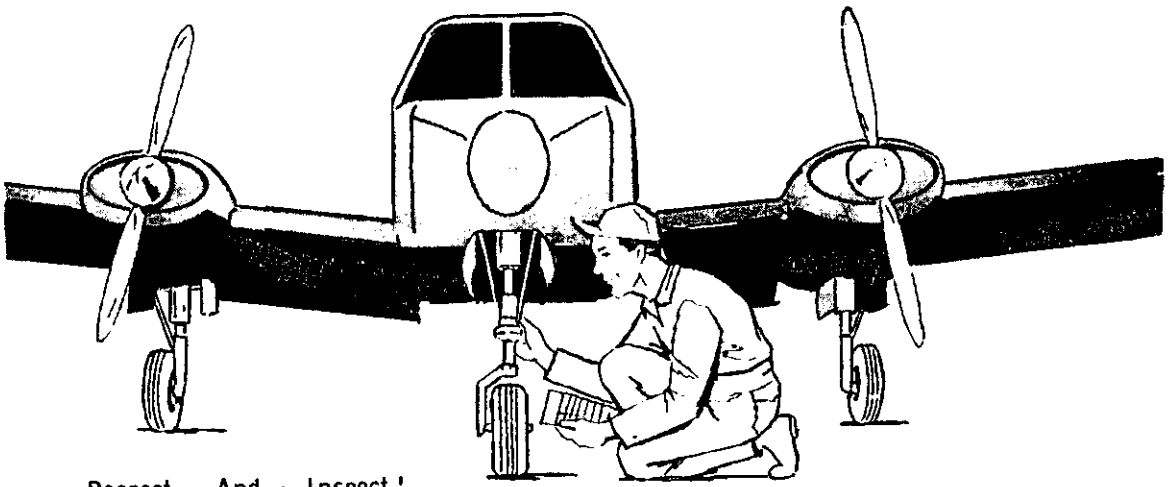
5. MECHANICAL FAILURE. Mechanically induced failures of retractable landing gear have involved malfunctions of warning systems, inoperative limit and safety switches, uplocks that failed to release, downlocks that failed to engage, and wheels that jammed or got hung up in the wheelwells. Cases are on record where chains have jumped sprockets, cables were fouled in pulleys, slide tubes became bound due to dirt contamination, and torque tubes and drag struts were bent due to excessive loads being applied. Many of these difficulties were found to be the result of improper rigging and adjustment.



6. PREVENTIVE MAINTENANCE. Particular attention should be directed toward keeping the landing gear and adjacent area clean and free of mud and debris. Dirty switches and valves may cause a false safe light indication or stop an extension cycle before the gear is completely down. Repair or replace protective boots that may be damaged or missing. Oversized or recapped tires may stick in the wheelwell and prevent gear extension. Assure that shock struts are properly inflated and the pistons are clean. Lubricate gear in accordance with the manufacturer's instructions.


Keep Gear Clean!

7. REQUIRED MAINTENANCE. During periodic inspections at least once a year and for 100-hour inspections, the aircraft is placed on jacks and the gear is completely inspected for condition, rigging, and proper operation including the warning system. Intermediate voluntary inspections of this type are further insurance measures against gear retraction systems malfunctioning.



Respect - And - Inspect!

8. INSPECTION FREQUENCY. How often is an inspection of a landing gear system necessary? At least as often as recommended by the manufacturer and required by Federal Aviation Regulations, but - some personal judgment is also needed.

When aircraft are operated from rough surfaces or are used for student instruction, more frequent inspections may be in order. When a hard landing is experienced or the gear strikes an object while taxiing, it is wise to inspect for damage. Damage may occur and rigging may be affected by sharp turns at high taxi speeds, by faulty technique during a crosswind landing, or by taxiing off of a hard surface into deep mud or snow.

Awareness of our human limitations and the proper application of good maintenance practices can effect a substantial reduction in accidents involving retractable landing gears, and will effect a substantial improvement in aviation safety - yours and mine!

for E. W. Walker
George S. Moore
Director
Flight Standards Service